IN THE CLAIMS

1. (Original) A method for processing and analyzing digital terrain data, comprising:

a) providing Digital Terrain Elevation Data (DTED);

b) defining an approach azimuth and a visibility limitations angle;

c) defining directional fans by determining a fan opening angle, a fan azimuth, and a maximal range for terrain analysis;

d) constructing at least one directional fan data set, from at least one source point within the DTED, that contains the line of sight information between said source point and DTED points located within said directional fan; and

e) interrogating said data sets by one or more queries to obtain terrain information for given approach conditions.

2. (Original) A method according to claim 1, wherein the directional fan azimuth is determined according to the approach azimuth.

3. (Original) A method according to claim 1, wherein the fan opening angle is determined according to the visibility limitations angle.

4. (Original) A method according to claim 3, further comprising defining a fan angular resolution.

5. (Original) A method according to claim 4, wherein the fan angular resolution is determined according to the fan opening angle and the fan maximal range.

6. (Original) A method according to claim 1, wherein the fan azimuth is set to the opposite

azimuth of the approach azimuth.

7. (Original) A method according to claim 4, wherein the directional fan(s) are constructed from one or more data set(s) of exposable heights, by performing the following steps:

a) evenly dividing the fan area into angular sections according to the fan angular resolution;

b) constructing a data set of exposable heights for each angular section, by computing for each point within the angular section the distance and elevation angle of said point relative to the fan source point;

c) determining for each point within a data set of exposable heights if said point is in line of sight with the fan source point; and

d) discarding the information related to the points within a data set of exposable heights which are not in line of sight with the fan source point,

thereby obtaining in each directional fan data set of exposable heights including the information of the DTED points, within said angular sections, that are in line of sight with the fan source point, and which are of corresponding azimuths.

8. (Currently Amended) A method according to claim 1 ~~or 7~~, further comprising compressing the data of the directional fans by applying a data transformation.

9. (Currently Amended) A method according to claim[[s]] 7 ~~and 8~~, wherein the data of a directional fan is compressed by performing the following steps:

a) defining a tolerable deviation for compression;

b) for each data set of exposable heights defining a line of exposable heights which is drawn between the points, of the respective angular section, which

are in line of sight with the fan source point, starting with the nearest point and ending with farthest point, in their respective sequence relative to said source point;

c) for each line of exposable heights defining a sleeve of tolerable deviation by adding the tolerable deviation D to the points of said line of exposable heights;

d) for each angular section compressing the data of the line of exposable heights by performing the following steps:

d.1) drawing the longest straight line possible within the sleeve of tolerable deviation starting at the edge of said sleeve;

d.2) defining an end point on said longest line within said sleeve at the farthest section where said longest line intersects with one of the boundaries of said sleeve;

d.3) drawing the next longest line starting from said end point of the previous line; and

d.4) repeating steps d.1) to d.3) until the end said sleeve is reached.

10. (Original) A method according to claim 9, wherein data compression of the line of exposable heights is performed starting from the farthest points within the angular section and proceeding toward the source point.

11. (Original) A method according to claim 9, wherein data of each directional fan is organized utilizing a polar coordinate system.

12. (Original) A method according to claim 11, wherein the data obtained form a directional fan is transformed from a polar representation into a Cartesian representation.

13. (Original) A method according to claim 9, wherein the pertinent data is obtained from the directional fan(s) via a lookup process.

14. (Original) A method according to claim 9, wherein the data obtained by query interrogation further comprises interpolation of the data within an angular section.

15. (Currently Amended) A method according to claim[[s]] 1 ~~to 14~~ , wherein the directional fan data set comprises the maximal range, the fan opening angle, the fan direction, the maximal compression deviation, the height of the source point, the spatial location of the source point, and the vectors of exposable heights and their direction.

16. (Currently Amended) A method according to claim 1 ~~or 7~~, wherein the fan opening angle is set to 360°.

17. (Original) A method according to claim 16, wherein the interrogation of the fan data set is carried out by extracting from each fan data set the lines of exposable heights which are of azimuths which falls within an opening angle directed in the opposite direction of that of the approach azimuth.

18. (Currently Amended) A method according to ~~any one of claims~~ claim 1 ~~to 17~~, wherein the interrogation of the fan data set is carried out by one or more queries for detecting the minimal altitudes in which communication and/or line of sight can be established with DTED points.

19. (Original) A method according to claim 18, wherein one or more of the following queries

are utilized to determine:

a) the minimal altitude required to establish of sight for a given distance and approach azimuth;

b) the minimal altitude required to establish communication with a given with a given point; and

c) the minimal distance required to establish line of sight with terrain points for a given altitude and azimuth of approach.

20. (Original) A method according to claim 18, wherein the interrogation of the fan data set is carried out by one or more queries from the following list:

- Queries of unknown azimuth of approach, utilizing a general azimuth of approach or a range of possible approach azimuths, and using the worst case results;

- Queries with a known azimuth of approach or having a general approach path, but in which the exact state is partially known or unknown; and

- Queries for a specific location for quickly analyzing an exact location.

21. (Original) A system for processing and analyzing digital terrain data, comprising:

a) a Digital Terrain Elevation Data (DTED);

b) means for defining approach azimuth and visibility limitations angle;

c) means for defining directional fans by determining fan opening angle, fan azimuth, and a maximal range for terrain analysis;

d) means for constructing at least one directional fan data set, from at least one source point within the DTED, that contains the line of sight information between said source point and DTED points located within the directional fan; and

e) means for interrogating said data sets by one or more queries to obtain terrain information for given approach conditions.

22. (Original) A system according to claim 21, wherein the fan azimuth is determined according to approach azimuth.

23. (Original) A system according to claim 21, wherein the fan opening angle is determined according to the visibility limitations angle.

24. (Original) A system according to claim 23, further comprising defining a fan angular resolution.

25. (Original) A system according to claim 24, wherein the fan angular resolution is determined according to the fan opening angle and fan maximal range.

26. (Original) A system according to claim 21, wherein the fan azimuth is set to the opposite azimuth of the approach azimuth.

27. (Original) A system according to claim 24, wherein the directional fan(s) is constructed from one or more data set(s) of exposable heights, by performing the following steps:

a) evenly dividing the fan area into angular sections according to the fan angular resolution;

b) constructing a data set of exposable heights for each angular section by computing for each point within the angular section the distance and elevation angle of said point relative to the fan source point;

c) determining for each point within a data set of exposable heights if said point is in line of sight with the fan source point; and

d) discarding the information related to the points within a data set of

exposable heights which are not in line of sight with the fan source point, thereby obtaining in each directional fan data set of exposable heights including the information of the DTED points, within said angular sections, that are in line of sight with the fan source point, and which are of corresponding azimuths.

28. (Currently Amended) A system according to claim 21 ~~or 27~~, further comprising compressing the data of the directional fans by applying a data transformation.

29. (Original) A system according to claim 28, wherein the data of a directional fan is compressed by performing the following steps:

a) defining a tolerable deviation for compression;

b) for each data set of exposable heights defining a line of exposable heights which is drawn between the points, of the respective angular section, that are in line of sight with the fan source point, starting with the nearest point and ending with farthest point, in their respective sequence relative to said source point;

c) for each line of exposable heights defining a sleeve of tolerable deviation by adding the tolerable deviation D to the points of said line of exposable heights;

d) for each angular section compressing the data of the line of exposable heights by performing the following steps:

d.1) draw the longest straight line possible within the sleeve of tolerable deviation starting at the edge of said sleeve;

d.2) define an end point on said longest line within said sleeve at the farthest section where said longest line intersects with one of the boundaries of said sleeve;

d.3) drawing the next longest line starting from said end point of the previous line; and

d.4) repeating steps 2 to 4 until the end said sleeve is reached.

30. (Original) A system according to claim 29, wherein data compression of the line of exposable heights is performed starting from the farthest points within the angular section and proceeding toward the source point.

31. (Original) A method according to claim 29, wherein data of each directional fan is organized utilizing a polar coordinate system.

32. (Original) A system according to claim 31, wherein the data obtained form a directional fan is transformed from a polar representation into a Cartesian representation.

33. (Original) A system according to claim 31, wherein the pertinent data is obtained from the directional fan(s) via a lookup process.

34. (Original) A system according to claim 31, wherein the data obtained by query interrogation further comprises interpolation of the data within an angular section.

35. (Currently Amended) A system according to claim[[s]] 21 ~~to 34~~, wherein the directional fan data set comprises the maximal range, the fan opening angle, the fan direction, the maximal compression deviation, the height of the source point, the spatial location of the source point, and the vectors of exposable heights and their direction.

36. (Currently Amended) A system according to claim 21 ~~or 27~~, wherein the fan opening angle is set to 360°.

37. (Original) A system according to claim 21, wherein the interrogation of the fan data set is

carried out by extracting from each fan data set the lines of exposable heights which are of azimuths which falls within an opening angle directed in the opposite direction of that of the approach azimuth.

38. (Currently Amended) A system according to ~~any one of claims~~ claim 21 ~~to 37~~, wherein the interrogation of fan data set is carried out by one or more queries for detecting the minimal altitudes in which communication and/or line of sight can be established with DTED points.

39. (Original) A system according to claim 38, wherein one or more of the following queries are utilized to determine:

a) the minimal altitude required to establish of sight for a given distance and approach azimuth;

b) the minimal altitude required to establish communication with a given with a given point; and

c) the minimal distance required to establish line of sight with terrain points for a given altitude and azimuth of approach.

40. (Original) A system according to claim 21, wherein the interrogation of the fan data set is carried out by one or more queries from the following list:

- Queries of unknown azimuth of approach, utilizing a general azimuth of approach or a range of possible approach azimuths, and using the worst case results;
- Queries with a known azimuth of approach or having a general approach path, but in which the exact state is partially known or unknown; and
- Queries for a specific location for quickly analyzing an exact location.